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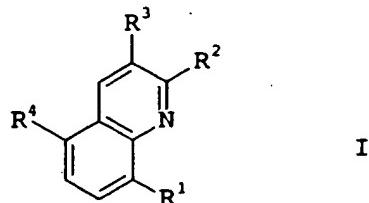
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CLAIMS AS FILED IN PRELIMINARY AMENDMENT 0Z 49365

1. A cyclohexenonequinolinoyl derivative of the formula I

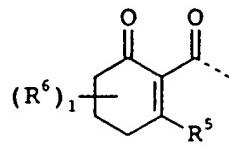


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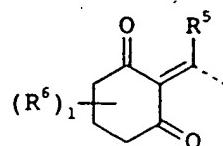
R¹ is hydrogen, nitro, halogen, cyano, C₁-C₆-alkyl, C₁-C₆-haloalkyl, C₁-C₆-alkoxyiminomethyl, C₁-C₆-alkoxy, C₁-C₆-haloalkoxy, C₁-C₆-alkylthio, C₁-C₆-haloalkylthio, C₁-C₆-alkylsulfinyl, C₁-C₆-haloalkylsulfinyl, C₁-C₆-alkylsulfonyl, C₁-C₆-haloalkylsulfonyl, aminosulfonyl, N-(C₁-C₆-alkyl)aminosulfonyl, N, N-di-(C₁-C₆-alkyl) aminosulfonyl, N-(C₁-C₆-alkylsulfonyl)amino, N-(C₁-C₆-haloalkylsulfonyl)amino, N-(C₁-C₆-alkyl)-N-(C₁-C₆-alkylsulfonyl)amino, N-(C₁-C₆-alkyl)-N-(C₁-C₆-haloalkylsulfonyl)amino, phenoxy, heterocyclyoxy, phenylthio or heterocyclthio, where the four last-mentioned radicals may be partially or fully halogenated and/or may carry one to three of the following substituents : nitro, cyano, C₁-C₄-alkyl, C₁-C₄-haloalkyl, C₁-C₄-alkoxy or C₁-C₄-haloalkoxy;

R², R³ are hydrogen, C₁-C₆-alkyl, C₁-C₆-haloalkyl or halogen;

R⁴ is a compound IIa or IIb



IIa



IIb

where

R⁵ is halogen, OR⁷, SR⁷, SOR⁸, SO₂R⁸, OSO₂R⁸, POR⁸R⁹, OPR⁸R⁹, OPOR⁸R⁹, OPSR⁸R⁹, NR¹⁰R¹¹, ONR¹¹R¹², N-linked heterocyclyl or O-(N-linked heterocyclyl), where the heterocyclyl radical of the two last-mentioned substituents may be partially or fully halogenated and/or may carry one to three of the following radicals:
nitro, cyano, C₁-C₄-alkyl, C₁-C₄-haloalkyl, C₁-C₄-alkoxy or C₁-C₄-haloalkoxy;

R⁶ is nitrol, halogen, cyano, C₁-C₆-alkyl,
C₁-C₆-haloalkyl, di-(C₁-C₆-alkoxy)methyl,
di-(C₁-C₆-alkylthio)methyl,
(C₁-C₆-alkoxy)(C₁-C₆-alkylthio)methyl, hydroxyl,
C₁-C₆-alkoxy, C₁-C₆-haloalkoxy,
C₁-C₆-alkoxycarbonyloxy, C₁-C₆-alkylthio,
C₁-C₆-haloalkylthio, C₁-C₆-alkylsulfinyl,
C₁-C₆-haloalkylsulfinyl, C₁-C₆-alkylsulfonyl,
C₁-C₆-haloalkylsulfonyl, C₁-C₆-alkylcarbonyl,
C₁-C₆-haloalkylcarbonyl, C₁-C₆-alkoxycarbonyl or
C₁-C₆-haloalkoxycarbonyl;

or

two radicals R⁶, which are linked to the same carbon,

together form an -O-(CH₂)_m-O-, -O-(CH₂)_m-S-, -S-(CH₂)_m-S-, -O-(CH₂)_n- or -S-(CH₂)_n chain which may be substituted by one to three radicals from the following group:

halogen, cyano, C₁-C₄-alkyl, C₁-C₄-haloalkyl or C₁-C₄-alkoxycarbonyl;

or

two radicals R⁶, which are linked to the same carbon,

together form a -(CH₂)_p chain which may be interrupted by oxygen or sulfur and/or may be substituted by one to four radicals from the following group:

halogen, cyano, C₁-C₄-alkyl, C₁-C₄-haloalkyl or C₁-C₄-alkoxycarbonyl;

or

two radicals R⁶, which are linked to the same carbon,

together form a methylidene group which may be substituted by one or two radicals

from the following group:

halogen, hydroxyl, formyl, cyano, C₁-C₆-alkyl, C₁-C₆-haloalkyl, C₁-C₆-alkoxy, C₁-C₆-haloalkoxy, C₁-C₆-alkylthio, C₁-C₆-haloalkylthio, C₁-C₆-alkylsulfinyl, C₁-C₆-haloalkylsulfinyl, C₁-C₆-alkylsulfonyl or C₁-C₆-haloalkylsulfonyl;

or

two radicals R⁶, which are linked to the same carbon,
together with this carbon form a carbonyl group;

or

two radicals R⁶, which are linked to different carbons,
together form a -(CH₂)_n chain which may be substituted by one to three radicals from
the following group:
halogen, C₁-C₆-alkyl, C₁-C₆-alkoxy, hydroxyl or C₁-C₆-alkoxycarbonyl;

R⁷ is C₁-C₆-alkyl, C₃-C₆-alkenyl, C₃-C₆-haloalkenyl,
C₃-C₆-alkynyl, C₃-C₆-haloalkynyl, C₃-C₆-cyloalkyl,
C₁-C₂₀-alkylcarbonyl, C₂-C₆-alkenylcarbonyl,
C₂-C₆-alkynylcarbonyl, C₃-C₆-cyloalkylcarbonyl,
C₁-C₆-alkoxycarbonyl, C₃-C₆-alkenyloxycarbonyl,
C₃-C₆-alkynyloxycarbonyl,
(C₁-C₂₀-alkylthio)carbonyl,
C₁-C₆-alkylaminocarbonyl,
C₃-C₆-alkenylaminocarbonyl,
C₃-C₆-alkynylaminocarbonyl,
N,N-di-(C₁-C₆-alkyl)aminocarbonyl,
N-(C₃-C₆-alkenyl)-N-(C₁-C₆-alkyl) aminocarbonyl ,
N-(C₃-C₆-alkynyl)-N-(C₁-C₆-alkyl) aminocarbonyl ,
N-(C₁-C₆-alkoxy)-
N-(C₁-C₆-alkyl) aminocarbonyl , N-(C₃-C₆-alkenyl)-
N-(C₁-C₆-alkoxy) aminocarbonyl , N-(C₃-C₆-alkynyl)-
N-(C₁-C₆-alkoxy) aminocarbonyl, di-(C₁-C₆-alkyl)-

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aminothiocarbonyl, C_1-C_6 -alkylcarbonyl- C_1-C_6 -alkyl,

C_1-C_6 -alkoxyimino- C_1-C_6 -alkyl,

$N-(C_1-C_6\text{-alkylamino})$ imino- C_1-C_6 -alkyl or

$N,N\text{-di-(}C_1-C_6\text{-alkylamino)}$ imino- C_1-C_6 -alkyl, where

the above-mentioned alkyl, cycloalkyl and alkoxy radicals may be partially or fully halogenated and/or may carry one to three of the following groups:

cyano, C_1-C_4 -alkoxy, C_1-C_4 -alkylthio, di-(C_1-C_4 -alkyl)amino, C_1-C_4 -alkylcarbonyl,

C_1-C_4 -alkoxycarbonyl, C_1-C_4 -alkoxy- C_1-C_4 -alkoxycarbonyl, di-(C_1-C_4 -alkyl)amino- C_1-

C_4 -alkoxycarbonyl, hydroxycarbonyl, C_1-C_4 -alkylaminocarbonyl, di-(C_1-C_4 -

alkyl)aminocarbonyl, aminocarbonyl, C_1-C_4 -alkylcarbonyloxy or C_3-C_6 -cycloalkyl;

phenyl, heterocycl, phenyl- C_1-C_6 -alkyl, heterocycl- C_1-C_6 -alkyl, phenylcarbonyl- C_1-

C_6 -alkyl, heterocyclcarbonyl- C_1-C_6 -alkyl, phenylcarbonyl, heterocyclcarbonyl,

phenoxy carbonyl, heterocyclloxy carbonyl, phenoxythiocarbonyl,

heterocyclloxythiocarbonyl, phenoxy- C_1-C_6 -alkylcarbonyl, heterocyclloxy- C_1-C_6 -

alkylcarbonyl, phenylarminocarbonyl, $N-(C_1-C_6\text{-alkyl})$ - $N-(phenyl)$ arminocarbonyl,

heterocyclarminocarbonyl, $N-(C_1-C_6\text{-alkyl})$ - $N-(heterocycl)$ arminocarbonyl, phenyl-

C_2-C_6 -alkenylcarbonyl or heterocycl- C_2-C_6 -alkenylcarbonyl, where the phenyl and

the heterocycl radical of the 20 last-mentioned substituents may be partially or fully

halogenated and/or may carry one to three of the following radicals:

nitro, cyano, C_1-C_4 -alkyl, C_1-C_4 -halogenalkyl, C_1-C_4 -alkoxy or C_1-C_4 -haloalkoxy;

R^8, R^9 are C_1-C_6 -alkyl, C_3-C_6 -alkenyl, C_3-C_6 -haloalkenyl, C_3-C_6 -alkynyl, C_3-C_6 -haloalkynyl,

C_3-C_6 -cycloalkyl, hydroxyl, C_1-C_6 -alkoxy, amino, C_1-C_6 -alkylamino, C_1-C_6 -

haloalkylamino, di-(C_1-C_6 -alkyl)amino or di-(C_1-C_6 -haloalkyl)amino, where the

abovementioned alkyl, cycloalkyl and alkoxy radicals may be partially or fully

halogenated and/or may carry one to three of the following groups:

cyano, C_1-C_4 -alkoxy, C_1-C_4 -alkylthio, di-(C_1-C_4 -alkyl)amino, C_1-C_4 -alkylcarbonyl,

C_1-C_4 -alkoxycarbonyl, C_1-C_4 -alkoxy- C_1-C_4 -alkoxycarbonyl, di-(C_1-C_4 -alkyl)amino- C_1-

C_4 -alkoxycarbonyl,

hydroxycarbonyl, C_1-C_4 -alkylaminocarbonyl, di-(C_1-C_4 -alkyl)aminocarbonyl,

aminocarbonyl, C_1-C_4 -alkylcarbonyloxy or C_3-C_6 -cycloalkyl;

phenyl, heterocyclyl, phenyl-C₁-C₆-alkyl, heterocyclyl-C₁-C₆-alkyl, phenoxy, heterocyclyloxy, where the phenyl and the heterocyclyl radical of the last-mentioned substituents may be partially or fully halogenated and/or may carry one to three of the following radicals:

nitro, cyano, C₁-C₄-alkyl, C₁-C₄-haloalkyl, C₁-C₄-alkoxy or C₁-C₄-haloalkoxy;

R¹⁰ is C₁-C₆-alkyl, C₃-C₆-alkenyl, C₃-C₆-haloalkenyl, C₃-C₆-alkynyl, C₃-C₆-haloalkynyl, C₃-C₆-cycloalkyl, hydroxyl, C₁-C₆-alkoxy, C₃-C₆-alkenyloxy, C₃-C₆-alkynyloxy, amino, C₁-C₆-alkylamino, di-(C₁-C₆-alkyl)amino or C₁-C₆-alkylcarbonylamino, where the abovementioned alkyl, cycloalkyl and alkoxy radicals may be partially or fully halogenated and/or may carry one to three radicals from the following group: cyano, C₁-C₄-alkoxy, C₁-C₄-alkylthio, di-(C₁-C₄-alkyl)amino, C₁-C₄-alkylcarbonyl, C₁-C₄-alkoxycarbonyl, C₁-C₄-alkoxy-C₁-C₄-alkoxycarbonyl, di-(C₁-C₄-alkyl)amino-C₁-C₄-alkoxycarbonyl, hydroxycarbonyl, C₁-C₄-alkylaminocarbonyl, di-(C₁-C₄-alkyl)aminocarbonyl, aminocarbonyl, C₁-C₄-alkylcarbonyloxy or C₃-C₆-cycloalkyl; phenyl, heterocyclyl, phenyl-C₁-C₆-alkyl or heterocyclyl-C₁-C₆-alkyl, where the phenyl or heterocyclyl radical of the four last-mentioned substituents may be partially or fully halogenated and/or may carry one to three of the following radicals:

nitro, cyano, C₁-C₄-alkyl, C₁-C₄-haloalkyl, C₁-C₄-alkoxy or C₁-C₄-haloalkoxy;

R¹¹,R¹² are C₁-C₆-alkyl, C₃-C₆-alkenyl, C₃-C₆-alkynyl or C₁-C₆-alkylcarbonyl;

l is 0 to 6;

m is 2 to 4;

n is 1 to 5;

p is 2 to 5;

and their agriculturally useful salts.

2. A cyclohexenonequinolinoyl derivative of the formula I as claimed in claim 1 where

R¹ is halogen, C₁-C₆-alkyl, C₁-C₆-haloalkyl, C₁-C₆-alkoxy, C₁-C₆-alkylthio, heterocyclyloxy or phenylthio, where the two last-mentioned radicals may be partially or fully halogenated and/or may carry one to three of the substituents mentioned below:

nitro, cyano, C₁-C₄-alkyl, C₁-C₄-haloalkyl, C₁-C₄-alkoxy or C₁-C₄-haloalkoxy;

R⁵ is halogen, OR⁷, SR⁷, SOR⁸, SO₂R⁸, OSO₂R⁸, OPR⁸R⁹, OPOR⁸R⁹, OPSR⁸R⁹, NR¹⁰R¹¹ or N-

bonded heterocycll which may be partially or fully halogenated and/or may carry one to three of the following radicals:

nitro, cyano, C₁-C₄-alkyl, C₁-C₄-haloalkyl, C₁-C₄-alkoxy or C₁-C₄-haloalkoxy.

3. A cyclohexenonequinolinoyl derivative of the formula I as claimed in claim 1, where R⁵ is halogen, OR⁷, NR¹⁰R¹¹ or N-bonded heterocycll which may be partially or fully halogenated and/or may carry one to three of the following radicals:

nitro, cyano, C₁-C₄-alkyl, C₁-C₄-haloalkyl, C₁-C₄-alkoxy or C₁-C₄-haloalkoxy.

4. A cyclohexenonequinolinoyl derivative of the formula I as claimed in claim 1, where

R⁷ is C₁-C₆-alkyl, C₁-C₂₀-alkylcarbonyl,

C₁-C₆-alkoxycarbonyl, (C₁-C₂₀-alkylthio)carbonyl, N,N-di-(C₁-C₆-alkyl)aminocarbonyl, phenyl, phenylcarbonyl or phenoxy-C₁-C₆-alkylcarbonyl, where the phenyl radical of the three last-mentioned substituents may be partially or fully halogenated and/or may carry one to three of the following radicals:

nitro, cyano, C₁-C₄-alkyl, C₁-C₄-haloalkyl, C₁-C₄-alkoxy or C₁-C₄-haloalkoxy;

R¹⁰ is C₁-C₆-alkyl or C₁-C₆-alkoxy;

R¹¹ is C₁-C₆-alkyl.

5. A cyclohexenonequinolinoyl derivative of the formula I as claimed in claim 1, where

R⁶ is nitro, halogen, cyano, C₁-C₆-alkyl, C₁-C₆-haloalkyl, di-(C₁-C₆-alkoxy)methyl, di-(C₁-C₆-alkylthio)methyl, (C₁-C₆-alkoxy)(C₁-C₆-alkylthio)-methyl, hydroxyl, C₁-C₆-alkoxy, C₁-C₆-haloalkoxy, C₁-C₆-alkoxycarbonyloxy, C₁-C₆-alkylthio, C₁-C₆-haloalkylthio, C₁-C₆-alkylsulfinyl, C₁-C₆-haloalkylsulfinyl, C₁-C₆-alkylsulfonyl, C₁-C₆-haloalkylsulfonyl, C₁-C₆-alkylcarbonyl, C₁-C₆-haloalkylcarbonyl, C₁-C₆-alkoxycarbonyl or C₁-C₆-haloalkoxycarbonyl;

or

two radicals R⁶, which are linked to the same carbon, together form an -O-(CH₂)_m-O-, -O-(CH₂)_m-S-, -S-(CH₂)_m-S-, -O-(CH₂)_n- or -S-(CH₂)_n chain which may be substituted by one to three radicals from the following group :

halogen, cyano, C₁-C₄-alkyl, C₁-C₄-haloalkyl or C₁-C₄-alkoxycarbonyl;

or

two radicals R⁶, which are linked to the same carbon, together form a -(CH₂)_p chain which may be interrupted by oxygen or sulfur and/or may be substituted by one to

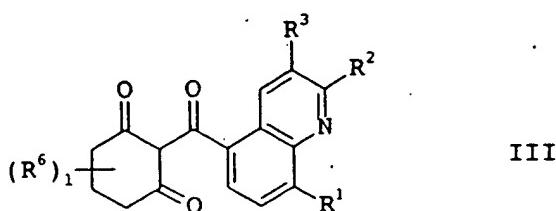
four radicals from the following group :

halogen, cyano, C₁-C₄-alkyl, C₁-C₄-haloalkyl or C₁-C₄-alkoxycarbonyl ;

or

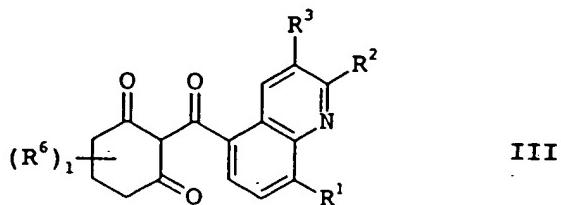
two radicals R⁶, which are linked to the same carbon, together with this carbon form a carbonyl group.

6. A process for preparing compounds of the formula I as claimed in claim 1 where R⁵ = halogen, which comprises reacting a cyclohexanedione derivative of the formula III,



where the variables R¹ to R³, R⁶ and 1 are each as defined in claim 1, with a halogenating agent.

7. A process for preparing compounds of the formula I as claimed in claim 1 where R⁵ = OR⁷, OSO₂R⁸, OPR⁸R⁹, OPOR⁸R⁹ or OPSR⁸R⁹, which comprises reacting a cyclohexanedione derivative of the formula III,

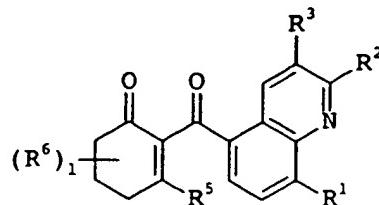


where the variables R¹ to R³, R⁶ and 1 are each as defined in claim 1, with a compound of the formula IV α , IV β , IV γ , IV δ or IV ε ,

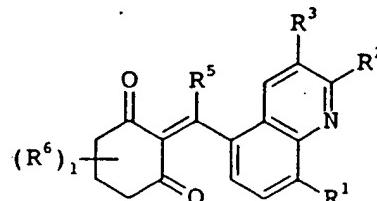
L ¹ -R ⁷	L ¹ -SO ₂ R ⁸	L ¹ -PR ⁸ R ⁹	L ¹ -POR ⁸ R ⁹	L ¹ -PSR ⁸ R ⁹
(IV α)	(IV β)	(IV γ)	(IV δ)	(IV ε)

where the variables R⁷ to R⁹ are each as defined in claim 1 and L¹ is a nucleophilically replaceable leaving group.

8. A process for preparing compounds of the formula I as claimed in claim 1 where R⁵ = OR⁷, SR⁷, POR⁸R⁹, NR¹⁰R¹¹, ONR¹¹R¹², N-linked heterocyclyl or O-(N-linked heterocyclyl), which comprises reacting a compound of the formula I α (= I where R⁵ = halogen, OSO₂R⁸),



and/or



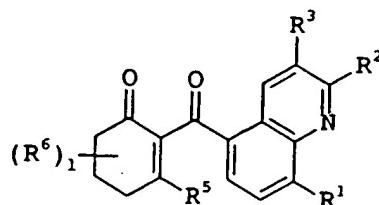
I where R⁵= halogen or OSO₂R⁸

where the variables R¹ to R³, R⁶ and 1 are each as defined in claim 1, with a compound of the formula V_α, V_β, V_γ, V_δ, V_ε, V_η, V_θ,

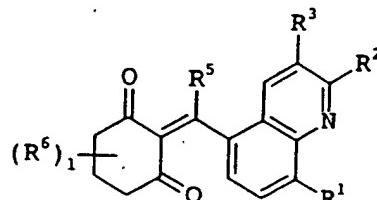
HOR ⁷	HSR ⁷	HPOR ⁸ R ⁹	HNR ¹⁰ R ¹¹	HONR ¹¹ R ¹²
(V _α)	(V _β)	(V _γ)	(V _δ)	(V _ε)
H(N-linked heterocyclyl)			H(ON-linked heterocyclyl)	
V _η			V _θ	

where the variables R⁷ to R¹² are each as defined in claim 1, if appropriate in the presence of a base.

9. A process for preparing compounds of the formula I as claimed in claim 1, where R⁵ = SOR⁸, SO₂R⁸, which comprises reacting a compound of the formula Iβ (=I where R⁵ = SR⁸),



and/or



I where R⁵ = SR⁸

where the variables R¹ to R⁸ and 1 are each as defined in claim 1, with an oxidizing agent.

10. A composition, comprising a herbicidally effective amount of at least one cyclohexenonequinolinoyl derivative of the formula I or an agriculturally useful salt of formula I as claimed in claim 1 and auxiliaries which are customarily used for formulating crop protection agents.

11. A process for preparing compositions as claimed in claim 10, which comprises mixing a herbicidally effective amount of at least one cyclohexenonequinolinoyl derivative of the formula I or an agriculturally useful salt of formula I and auxiliaries which are customarily used for formulating crop protection agents.

12. A method for controlling undesirable vegetation, which comprises allowing a herbicidally effective amount of at least one cyclohexenonequinolinoyl derivative of the formula I or an agriculturally useful salt of formula I as claimed in claim 1 to act on plants, their habitat and/or on seeds.

13. The use of cyclohexenonequinolinoyl derivatives of the formula I or their agriculturally useful salts as claimed in claim 1 as herbicides.

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